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A MODIFICATION

OF THE

Reichert Distillation Process

FOR

BUTTER

BY

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A MODIFICATION OF THE REICHERT DISTILLATION PROCESS FOR BUTTER.

In connection with a series of prosecutions for the sale of oleomargarin, we have had occasion to make numerous examinations of samples, and have been impressed with the fact that the otherwise advantageous distillation method is open to the objection that much time and trouble are required to remove the last portions of alcohol from the butter-soap. With a view to hasten this part of the process we substituted methyl alcohol, (distilled from sodium hydroxide,) with apparently decided advantage, since this was completely removed in from twenty-five to thirty minutes, by heating in a suitable water-bath, while ordinary alcohol requires

from forty to sixty minutes. The method, however, still seemed to be susceptible of improvement, since it is desirable to discard alcohol entirely in the saponification, in order to avoid loss by formation of ethers. Mansfield (*Milch Zeitung*, 1888, xv.) has already accomplished this by heating the butter with an aqueous solution of potassium hydroxide. The process requires several hours for complete saponification, and even then, as Wiley has pointed out (*U. S. Dept. of Agric., Chem. Dept., Bulletin No. 24*,) the results may be too low unless carried out in a closed flask.

After some experiments, we finally adopted glycerol as the medium in which to effect saponification. Thus carried out, the process seems to leave nothing to be desired. The high temperature at which the saponification takes place, renders it both rapid and complete, and loss by the formation of volatile ethers is avoided.

The saponification is effected by a mixture prepared by adding 25 c.c. of a clear fifty

per cent. solution of sodium hydroxide to 125 c. c. of pure glycerol, *e. g.* Merck's redistilled, and boiling from fifteen to twenty minutes, to evaporate the greater portion of the water.

About 5 grammes of the clear fat are weighed out in a flask in the usual manner, 10 c.c. of the alkali-glycerol added, and the flask heated over the Bunsen burner. The mixture may foam somewhat; this may be controlled and the operation hastened by shaking the flask. When all the water has been driven off, the liquid will cease to boil and if the heat and agitation be continued for a few moments complete saponification will be effected, the mixture becoming perfectly clear. The whole operation, exclusive of weighing the fat, will require less than five minutes. The flask is then withdrawn from the heat, and the soap dissolved in 90 c. c. of water. The first portions of water should be added drop by drop, and the flask shaken between each addition in order to avoid foaming. When the soap is

dissolved, 50 c. c. of diluted sulphuric acid —25 c. c. of the concentrated acid to the liter—are added, a piece of pumice dropped in, and the distillation conducted as usual until 100 c. c. of distillate are collected.

Blank experiments have given us a distillate requiring from 0.2 to 0.3 of decinormal alkali.

For the identification of "straight oleos" we have found it sufficient to measure out carefully 3 c. c. of the clear melted fat and use one-half the quantity of the reagents.

The alkali-glycerol is quite viscid when cold. It should be kept in a flask closed with a rubber stopper and heated when the measured portion is to be taken.

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